

THE BULLETIN

Monthly News from ENERGY STAR BuildingsSM and Green Lights[®]

April 5, 1999



Web Site Information

ENERGY STAR BuildingsSM
and Green Lights[®]
www.epa.gov/buildings

ENERGY STAR[®] Label
for Buildings
www.epa.gov/buildinglabel

Ally Services and Products
(ASAP) Directory
www.epa.gov/asap

Bulletin Home Page
www.epa.gov/appdstar/news

Earth Day: A Chance to Showcase Your Participation and Success

Earth Day is a great opportunity for your organization to promote its participation and achievements in ENERGY STAR Buildings and Green Lights. On April 22 and throughout the month of April, organizations will be sharing their environmental initiatives with employees, customers, the community, and other stakeholders. Communicating your efforts in energy efficiency, which helps prevent air pollution, adds to your organization's positive environmental image.

Check what Earth Day activities your organization is planning, and see how you can combine with these events and promotions. Below are some ideas to help you on communicating your organization's participation:

- ★ Arrange for a facilities' employee to attend and speak at an Earth Day event or ceremony
- ★ Reward your facilities staff with coffee mugs or T-shirts with the ENERGY STAR Buildings or Green Lights logos
- ★ Prepare a slide show on your energy savings and the environmental benefits for an internal meeting
- ★ Write an article for your organization's internal newsletter to share energy savings and environmental benefits, and to relate energy efficiency to the environment
- ★ Make energy the theme of an Earth Day contest
- ★ Join with other organizations in your community, such as schools, local

government, or small businesses, and host an energy fair or event

- ★ Create an energy-efficiency page on your Web site.

Here are some energy translations that can help you relate energy savings to the environment:

Saving 6,750 kWh=

- ★ 10,000 lbs. of CO₂ emissions
- ★ 1 car off of the road or
1.4 acres of trees planted

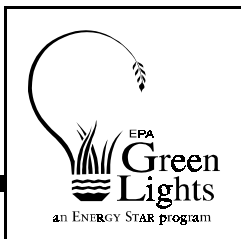
Saving 9,965 kWh=

- ★ powering 1 American home for a year

For public relations sample documents, please visit our Web site at
www.epa.gov/buildings

Earth Day Challenge Results

Congratulations to the 265 organizations that participated in the Earth Day Challenge. Criteria for award levels included completing lighting upgrades, joining ENERGY STAR Buildings, reporting baseline energy data for each facility, and reporting annual energy data for each facility. All winners will receive a communications toolkit to help them communicate their achievements for Earth Day. In addition, those that reported facility data will be featured on EPA's ENERGY STAR Buildings Web site at www.epa.gov/buildings during the month of April. See the listing beginning on page 2 for the organizations that reported their energy data through the Challenge.



Earth Day Challenge Results

We would like to recognize the following organizations for reporting their energy data:

Allies

Arrowhead Environmental Control, Inc.

CEC Consultants

Electronic Lighting Inc.

Engineered Services Inc.

Honeywell Inc.

Johnson Controls, Inc.
Controls Business

New Hampshire Electric Cooperative, Inc.

Verle A. Williams &
Associates, Inc.

Wismarq Light Company Inc.

Healthcare

Allegheny University Hospitals
Beth Israel Deaconess
Medical Center

City of Hope Medical Center
Fairview Southdale Hospital
Mary Washington Hospital
Mercy Hospital of Pittsburgh
National Jewish Hospital
North Memorial Healthcare
Parma Community General
Hospital

Saint Joseph's Hospital (WI)

Saint Luke's Hospital (FL)

St. Charles Medical Center

University of Texas Health
Science Center

VA Medical Center,
Indianapolis

VA Medical Center, Palo Alto

Washington County Health
System

Washington Hospital Center

Partners' Earth Day Promotions

Many ENERGY STAR Buildings and Green Lights participants are communicating their involvement in the Partnership for Earth Day. Here are just a few:

Food Lion celebrated its first year in ENERGY STAR Buildings with a signing ceremony at the grand opening of its new Lexington, South Carolina store. The store, Food Lion's first ENERGY STAR Building facility, will save 43,000 kilowatt hours of electricity—enough to power four American households for a year. Food Lion also distributed brochures at the ceremony to inform employees about the store's energy-efficiency technologies and educate them on how they can save energy at home. The grocery chain plans to implement similar energy-efficiency upgrades at more than 650 facilities across its 11-state operating area.

Since joining ENERGY STAR Buildings in February 1999, **Harleysville Mutual Insurance** is already communicating the benefits of energy efficiency to its employees and their families. As part of the company's Earth Day activities, it will distribute a kids coloring book to employees on compact fluorescent lighting and saving energy. Harleysville will also announce its new partnership with EPA, and share with employees the anticipated energy and environmental savings from upgrading its facilities.

On Earth Day, the **VA Medical Center, San Diego** is hosting an Energy Fair to educate employees and visitors on protecting the environment and using energy wisely. The Medical Center's Facilities staff, led by Director Rick Powless, will offer posters, brochures, and pamphlets on energy efficiency and

pollution prevention. Energy Fair attendees will also learn about the Medical Center's achievements in the ENERGY STAR Buildings and Green Lights Partnership. Since installing T8 fluorescent lamps, occupancy sensors, and electronic timers in the facility, VA Medical Center saves \$33,500 in annual energy costs and prevents the emission of 326,000 pounds of carbon dioxide each year.

Federal Express will hold an Earth Day poster contest for employees' kids to generate awareness about energy and the environment. Fed Ex, which joined ENERGY STAR Building in Fall 1998, is also planning to formally celebrate its commitment to energy efficiency in a kick-off event this May.

Geothermal Technology: Bringing Your Energy Costs Down to Earth

What if there was a system you could install that would regulate your building's heating and cooling needs, reduce your building's energy demand, and require little additional maintenance? Geothermal heat and cooling systems have been offering these benefits to commercial facilities for nearly 40 years and they continue to become more cost-effective with improved installation practices. Despite the fact that fuel costs are at historic lows, the number of geothermal installations jumped 22 percent in 1997 compared to 1996.

What has driven this latest wave of interest in geothermal technology? Many organizations are realizing that improvements to their facilities, such as energy-efficiency measures, can add to their buildings' asset values while decreasing operating costs. At the same time, new developments in trenching and drilling practices have lowered geothermal

Earth Day Challenge Results—continued

Hospitality and Entertainment

ABC

Green Bay Packers

Jay Peak Ski and Summer Resort

Kiel Center

Mohegan Tribal Nation

Trump Plaza

Trump Taj Mahal

Universal Studios

Industrial

Estee Lauder

Lockheed Martin SLRC

Merck & Co.

Office and Service

ABB Instrumentation

Affiliated Computer Services

Andrew Corp. Commun. Products

Andrew Corp. Commun. Systems

Compaq Computers

Dell Computers

Milwaukee Insurance

Siemens Business Commun. Systems

Siemens ICN

Retail

BJ Wholesale

Boscov's Department Stores

Dollar General

Lucky Stores, Southern Div.

Mervyn's

Publix Supermarkets

Shaw's Supermarkets

ShopKo Supermarkets

Target Stores

installation costs and reduced the payback time of the investment. The annual energy savings of geothermal systems can be significant—Salem Community College, a state-supported college in New Jersey, estimates it will save more than \$60,000 each year after installing two large geothermal systems.

How it works

Beginning at about six feet below the surface, the earth's temperature remains within a relatively narrow range of 45 to 70 °F throughout the year. A geothermal system absorbs heat from the earth in the winter and expels it in the summer by circulating fluid through a loop submerged in either the earth or a lake or pond. Geothermal heating and cooling systems use this natural heat source or heat sink to allow the system to operate more efficiently, which enables the indoor compressor unit to consume

much less energy. The type of system installed depends on the climate, soil conditions, installation costs, and other factors.

Ground-based systems

Horizontal loop systems are the most economical to install, but require large land areas (e.g., a parking lot or open field). The soil type must allow contractors to dig trenches easily and lay out pipes four to six feet below the surface. Pipes may be coiled to reduce the this system type requires 400 to 600 feet of ground space per ton of heating or cooling demand.

Vertical loop systems are an alternative type of system when there is insufficient or inappropriate land area for the heating amount of land area needed; however, and cooling capacity needed. In a vertical loop system, wells are dug from 150 to

CALL FOR NOMINATIONS

First Annual ENERGY STAR® Small Business Awards

ENERGY STAR Small Business is a free EPA service to help small business owners cut costs through energy efficiency. If you or a small business owner you know practices exemplary energy efficiency, call the ENERGY STAR Hotline at 1-888-STAR YES to enter.

Award criteria

- **You may nominate your own business, your vendors, or any another small business.**
- **The small business/organization must be a facility of 100,000 square feet or less and may not be in the energy equipment industry.**
- **The nominated business should be practicing exemplary energy efficiency that translates into real dollar savings.**
- **Nominees who have shown creative and innovative solutions are highly encouraged to enter.**

Nominations and Questions

Call the ENERGY STAR Hotline at 1-888-STAR YES, and select option 2, then 3. You may also fill out an application at the ENERGY STAR Small Business Web site at www.epa.gov/smallbiz.

Deadline for Applications: June 1, 1999

New Participants

We welcome the following new
ENERGY STAR Buildings
Partners:

Grady Health Systems

Health Midwest

Herman Miller

Kiel Center

Mohegan Tribal Nation

**Washington County Health
System (MD)**

We welcome the following new
ENERGY STAR Buildings Allies:

Air Strata Corporation

Air-Temp Climate Control, Inc.

E. Sam Jones Distributor, Inc.

Energy Consultants Inc.

Lentz Engineering Associates

Light Incorporated, Nashville

450 feet or more, with a single U-bend at the bottom. After piping is installed, grout is carefully back-filled into each well. The grout materials are improving in their heat transfer capabilities.

Although vertical wells are generally more expensive to install than horizontal loops, they require less piping per ton because the earth's temperature deeper down is more consistent.

Water-based systems

Buildings located near bodies of water have the option of submerging coils or loops in a pond or lake. This type of geothermal system requires minimal excavation and piping; as in ground loop systems, pipe may be coiled in a "slinky" shape to fit more of it into a given space. Water depth and surface area are key factors when considering whether the pond or lake is suitable. Some experts recommend using a pond loop only if the water level never drops below four to six feet deep at its lowest level, to ensure sufficient heat-transfer capability.

Open loop systems are a possibility in areas where there is a large supply of groundwater. This is the simplest, and often most cost-effective, geothermal system, as it directly uses groundwater as the heating and cooling source.

Groundwater is pumped from a well to the building, where it transfers heat to the heat pump, and is then returned to the ground through a second well at a suitable distance from the first.

Standing column wells (SCW) use deep and vast reservoirs of groundwater. Standing wells typically are six inches in diameter and may be up to 1,500 feet deep. Temperate water from the bottom of the well is withdrawn, circulated through the heat pump's heat exchanger, and returned to the same well. This geothermal system is an established technology, especially in northeastern

U.S. locations where groundwater is plentiful.

Site Considerations for Installation

Geothermal heating and air conditioning systems are suitable for virtually any type of building, large or small. Typical applications include schools, retirement centers, hotels, gas stations, office buildings, and single-family housing units. For all building types and uses, the ground conditions or water body availability at the site will largely determine the installation costs and viability of each type of geothermal system. For example, in a location where the soil does not allow deep-well digging and installation of a vertical loop-type system, the geothermal system will require more land to install a shallower, horizontal coiled loop system. Open-loop geothermal systems, which are only used where groundwater is plentiful, require consultation with local environmental codes officials.

Maintenance of Geothermal Systems

Geothermal heating and cooling systems require smaller mechanical room, equipment, and floor-to-floor spacing than conventional systems. Geothermal technologies also require less maintenance, although regular upkeep of internal air distribution units is important. The compressor units should be properly enclosed within mechanical closets or rooms. Systems are typically modular in design, which allows servicing of one compressor unit without affecting the entire space. Just like conventional HVAC technologies, integrated building automation systems can assist with practical and efficient operation and monitoring of systems.

Installation costs and energy savings As with any new heating or cooling system, there are initial investment costs for geothermal technology. Installation,

Bulletin Subscription Information

The Bulletin is distributed on the first Monday of the month to more than 6,000 ENERGY STAR Buildings and Green Lights participants and friends.

To add or remove your name from the fax distribution list, please call the toll-free Hotline at: **1-888-STAR YES.**

To receive *The Bulletin* electronically, please send an e-mail to: "listserver@unixmail.rtpnc.epa.gov" and in the message body type in the following:

subscribe energystar

your First Name

your Last Name

If you have questions, you may e-mail Christie Smith, *Bulletin* Editor, at:
smith.christie@epamail.epa.gov
or call the toll-free Hotline.

which may include trenching, boring, and backfilling, is one of the major costs of geothermal systems. In many cases this can equal the cost of the equipment. Recent innovations in trenching and drilling practices continue to lower the installation costs, however, making the technology more cost effective.

Typical costs for systems in 0.5 to 5 ton range are \$30 to \$100 per kBtuh per unit of COP (coefficient of performance). Smaller units cost more per kBtuh. For example, a 3-ton (36 kBtuh) unit with a COP of 3.0 would cost about \$3,800 installed. Because geothermal systems are more efficient at converting energy to heat, instead of burning a combustible fuel to make heat, they simply move heat that already exists, a geothermal system generates energy cost savings quickly. Geothermal heat pump systems are more than three times as efficient as the best fossil fuel furnaces. Thus, most geothermal systems pay back the investment in two to six years.

For more information on geothermal technology, you may consult GeoExchange Case Studies—Scholastic on the Web at: www.ghpc.org/cases/dircases.htm.

Ask the Energy Expert

Have a Question?

Get your maintenance, financing, communications, and partnership questions answered by e-mailing Christie Smith, *Bulletin* Editor, at smith.christie@epamail.epa.gov. Answers to technical questions and other technical tips are also available on the Ally Services and Products (ASAP) Directory on the Web at: www.epa.gov/asap.

Upcoming Events

Indoor Environment '99: Solutions, Strategies & Management

April 19-21, 1999

Indoor Environment '99 is a conference and exhibition for professionals in industry, government, and building management. More than 60 conference speakers are scheduled to make presentations in 32 technical sessions and advanced workshops covering four educational tracks: School Environments, Hot & Humid Climates, The IAQ Professional, and Healthy Building Management.

The conference will be held at the Renaissance Austin Hotel in Austin, Texas.

For more information, contact IAQ Publications, Inc. at:
1-800-394-0115, x104 or e-mail:
conferences@iaqpubs.com